The JOURNAL *of* GEOGRAPHY

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VOLUME XXXVI JANUARY, 1937 NUMBER 1

FACETS OF FJORD ECONOMY: A STUDY IN LIFE ON SOGNE FJORD, NORWAY

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Sogne, the longest, most picturesque, and in many ways the most typical of Norwegian fjords, best illustrates some of the distinctive facets of fjord economy: the close dependence of the fjord people upon water—the sea, the glaciers, the mountain streams, the waterfalls; the intimate relation between the cultural attributes of the folk and the forest that surrounds them; and the important rôle the remote alpine pastures of the ice-scarred plateau play in the seasonal regimentation of their activities. Water, forest, and mountain pasture—these constitute the three elements dominant in Norwegian fjord economy.

PHYSICAL CHARACTERISTICS

Sogne Fjord practically bisects the highest portion of the southern, and widest, extension of the Norwegian uplands, for it lies between the rugged plateau of Jotunheim with its great Jostedal's brae, or icefield, northward, and the glacier-crowned heights of Hardanger Fjeld southward. From its outlet upon the Atlantic it penetrates wellnigh due eastward almost 100 miles into the massif it divides, terminating at the little hamlet of Aardal on the innermost recess of the Fjord.

Almost a score of lesser and greater tributary fjords, some extremely picturesque and interesting, form part of the Sogne Fjord system, an integrated geographic unit. Two major branches, Fjaerland's Fjord and Lyster Fjord, open upon the northern side; and, one, Aurland's Fjord, narrow and canyonlike, opens upon the southern side. Aardal's Fjord constitutes the innermost extension of Sogne Fjord.

The fjord region of Norway is characterized by strong marine regime of climate, with pronounced annual and diurnal uniformity

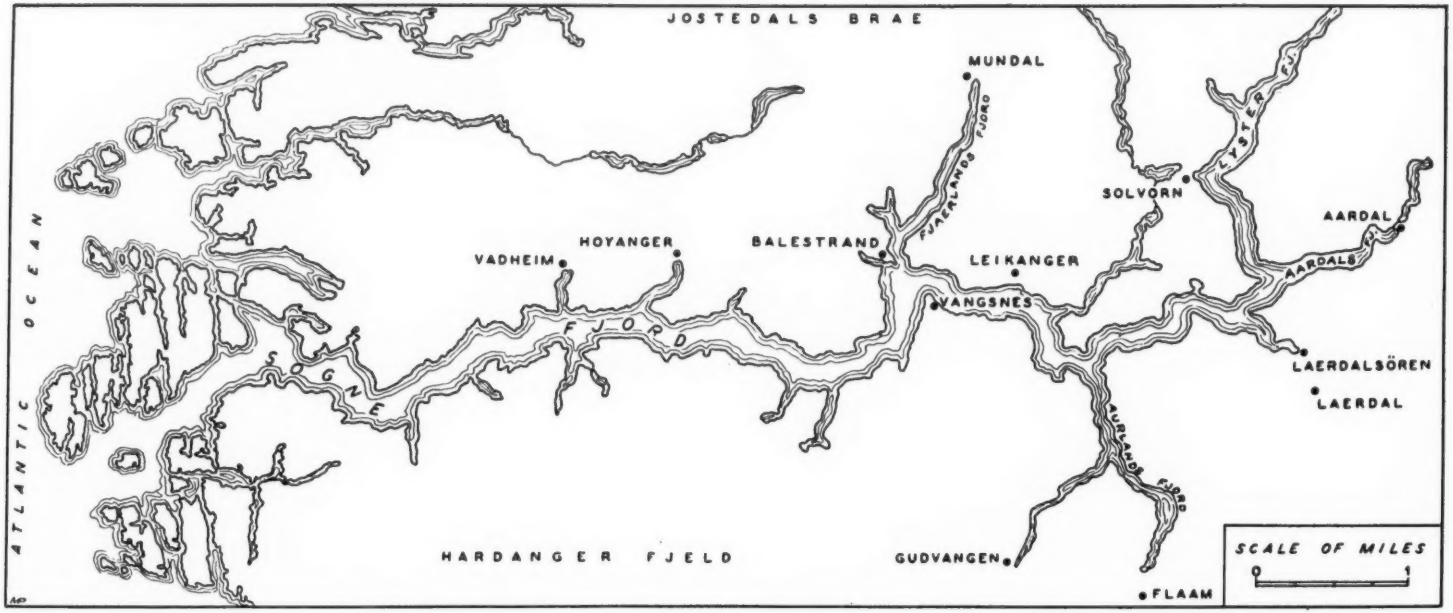

FIG. 1. Sogne Fjord, the longest and most picturesque fjord of the Norwegian coast, penetrates into the plateau more than a hundred miles from its mouth to the little hamlet of Aardal at its head. It has two major fjords opening from the north and one from the south.

of temperature, rainfall, and humidity; and distinguished by abnormally high temperatures and long frost-free growing season with respect to its high latitude; but both uniformity and abnormality diminish as distance from the sea increases, and its influence becomes less effective.

Heavy precipitation uniformly distributed thruout the year and exceeding twelve inches every season, and four inches every month except April, insures copious rainfall during the warmer months of the year and heavy snow cover most of the colder months. The annual precipitation at the mouth of Sogne Fjord averages 80 inches, and at Laerdalsören, eighty-seven miles from the coast, only 16 inches. Similarly, the uplands about the head of the Fjord have notably higher temperatures in summer and lower temperatures in winter than have the skerries about its mouth. The mouth of Sogne Fjord rarely has temperatures below freezing, whereas at the inner end of the Fjord at Aardal the January isotherm of 21°F. indicates rather continuous winter subfreezing temperatures. In July the mouth of the Fjord lies on the isotherm 57°F. average July temperature, whereas Aardal's Fjord lies on the isotherm 61°F., an average of four degrees higher average summer temperature at the head of the Fjord than at the mouth.

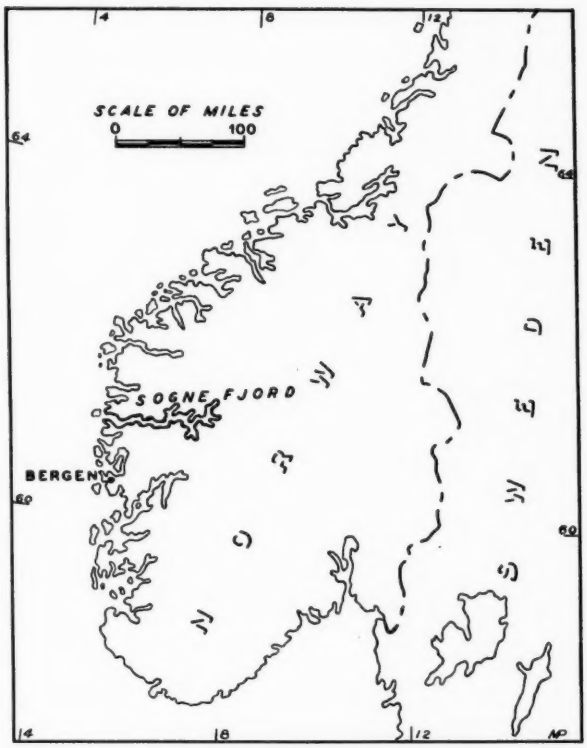

FIG. 2. Sogne Fjord is located across the middle of the widest and highest part of Norway. It can be easily visited from Bergen, which lies only a few miles south of its mouth.

More than 200 days of every year are rainy and snowy at the

mouth of the Fjord, whereas at the head of the Fjord at Aardal the number is less than 150, of which just about half are snowy. The first snow falls in late September or early October at the head of the Fjord, generally several weeks later at the mouth; similarly, rain falls at the mouth of the Fjord earlier in spring and the winter snow melts earliest there. The heaviest snowfall appears on the walls of the fjords several hundred meters above sea-level, just where the snow-free period is longest.

More than 200 days are foggy at the mouth of the Fjord, not many more than a hundred at Aardal, its head. Only about thirty days of the year are quite free from fog at the mouth of the Fjord; more than twice as many at the head.

With such wide diversity of terrain within relatively short distances, the climate of the whole fjord region shows numerous variations, and extreme localization of characteristics. The differences between the mouth and the head of Sogne Fjord are probably greater than in any other fjord, because of its greater length; between the main fjord, which lies approximately parallel to the prevailing drift of the air and open to the Atlantic, and the branch fjords, which extend transversely across the path of air movement, the differences are just as great or even greater. Yet in its entirety, the fjord region is characterized by fairly heavy rainfall and uniform temperatures, abnormally higher in winter than their latitude would indicate. The benign influence of the Gulf Drift reveals itself most in the abnormal seasonal temperatures and humidity.

In a region of such rugged and high relief the effect of steep slopes, high gradients of streams, and rocky terrain is pronounced. Drainage in the fjord region is uniformly adequate; soil is thin and widely scattered; water supply is abundant. Transportation and communication by land are difficult and hazardous. Arable land is exceedingly rare.

The Rôle of Water

Water plays the most important part in fjord life and economy. Everywhere it dominates the thought, the speech, the habits, of the fjord folk. Their whole history is enwrapped in their varied fabric of sea-associations, sea contact. From babyhood to old age they live in intimate relation with the sea, the rushing streams that mark their every hamlet and homestead, the turbulent cascades and cataracts that break the solitude of rocky cliffs with sound of thunder as their torrents plunge over the edge of the plateau to the sea or

the rocks below. They think of life and living in terms of water, as they have thought thru centuries.

The smaller branches of the fjords constituted the first units of Norwegian tribal society, each more or less self-contained and independent. In time they associated to form the greater units embracing the main fjords and all their branches. And finally the various fjord peoples were drawn together by their common heritage of sea-

FIG. 3. The head of Fjaerland's Fjord, one of the northern tributaries of Sogne, where the peaceful little hamlet of Mundal occupies the delta built up at the mouth of the little stream flowing from the melting banks of the great glacier, Jostedal's brae, just visible to the right above the spurs of the valley forelands. The photograph was taken at midnight, June 13, 1930.

intimacy, their common interests in sea-harvests, to combine in the great piratical expeditions of the Vikings, to join in the Hanseatic League, to have a part in emigration and colonization, first upon the conquered shores of Britain, Ireland, Normandy, Iceland, and elsewhere in Europe, and then in the remote lands of the Americas and the antipodes.

The home life of every fjord family is regulated by its intimacy with water. Never is there any serious concern for an ample supply of pure, wholesome drinking water—an abundance is ever at hand in the multitude of streams that the trust-worthy rainfall produces,

or that issue from snow and icefield on the heights, or from cleanly alpine pasture. The same abundance of water is at hand for personal cleanliness, for laundry, for every necessity of home cooking and home cleaning. The fjord home, and all its equipment, and similarly the mountain saeter and all its dairy implements, are spotlessly immaculate. Almost every fjord home creamery, or milkhouse, stands astride a purling brook, of which the cooling current pours around the jars and bowls of milk and cream and butter.

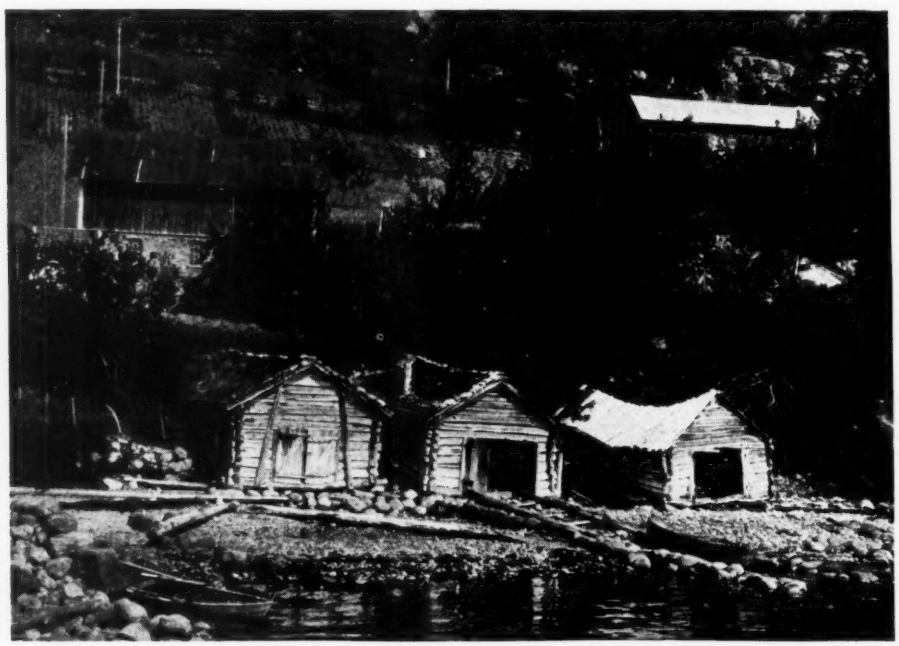

FIG. 4. A group of three typical Sogne Fjord boathouses, built of pine logs from the forest back of the farmsteads, which shelter the rowboats for three families living at the croft. It is by rowboat that the fjord folk move from place to place, keep in touch with their neighbors and get to and from school, church, and market. The rowboat is to the fjord family what the automobile is to the American.

The larger streams have long been employed for domestic or village power, to supply the sawmills which until recently were almost all operated by direct water power. Because the streams are of such adequate volume and strength of current, many of the waterwheels were undershot, despite the ease with which the steep gradients could be controlled to turn breast wheels, or overshot wheels. Adequacy and uniformity of volume and velocity made the undershot wheel in most cases the easier and more economical to construct and operate. On every stream where expediency in the

handling and marketing of processed lumber decreed, a sawmill was set up. In recent decades great hydroelectric installations, which utilize the enormous power available from the major streams with their steep gradients and abundant volume, supply electric power so sufficiently, easily, and cheaply that many of the small local water power sawmills have been converted into establishments using electricity.

FIG. 5. Every village, every hamlet, almost every farmstead has its wharf or landing-place where the steamers that ply regularly the length of Sogne Fjord and its branches stop to take on milk, or cattle, or timber, or homecrafts, and to discharge parcels of merchandise from all continents. The docks are the meeting places for the fjord folk; there they assemble to watch the ship come in, learn the world's news, and to greet the tourist or returning traveler or emigrant.

The hydroelectric installations along Sogne Fjord have appreciably transformed the economy of the districts accessible to them wherever a processing plant using the power has created demand for labor. The nitrate plant at Vadheim, operated for the British government and said to be controlled and owned by that government, employs a goodly number of Norwegian operatives who form a settlement of considerable size nearby. The aluminum factory at Hoyanger, a subsidiary to a great American company, employs a large proportion of Norwegian laborers and skilled foremen and supervisors. It is run upon American capital under franchise from the Norwegian government, is operated by Norwegian skill and

labor, and uses bauxite from North Africa, as its raw material. The residences of the operatives form a small city of modern, comfortable homes. The Norwegian government, which derives no mean income from royalties and franchises granted the manufacturing companies, has safeguarded discreetly, in the regulations prescribed for the utilization of the great stores of water power their fjords develop, the best interests of its fjord folk. Fjord water power

Fig. 6. The huge establishment of the American-financed and American-controlled aluminum factory at Hoyanger, under franchise from the Norwegian government which collects a reasonable royalty, and regulates the relations between the company and its employes and prescribes the conditions under which the mill may operate. The plant affords steady employment and high wages to many fjord workmen. It uses bauxite from northern Africa as its raw material, and employs hydroelectric power generated locally.

constitutes an asset of the first magnitude, an asset in which the whole Norwegian nation has a stake.

The rugged terrain, mantled by sharp fragments of rock talus from the steep cliffs and clothed with somber stands of pine and spruce forest, have rendered land transport and travel difficult, hazardous, and expensive and have reduced facilities for communication so drastically that the system of highways and trails, and post roads and telephone lines, is not even yet commensurate with the needs of the fjord section. The several communities on the branches of Sogne Fjord have relatively slight communication with

one another, or with other fjord communities, by land; so far as land connections are concerned they are still well isolated and still inaccessible.

It is to their water-ways that the fjord folk turn for their travel and communication. By rowboat from homestead to homestead, from homestead and croft to village and back again; and by steamer from village to village, from one branch of the fjord to another, or

FIG. 7. The residences of the employes of the "American" aluminum plant at Hoyanger, on Sogne Fjord. The modern comfortable cottages, their tastefully landscaped gardens leading down to the water's edge, the boats riding at the foot of the steps from the garden, constitute a commentary upon the economic effect the fjord water power has upon the lives and welfare of the fjord folk. The boats and the flagstaffs represent two attributes of the Norwegians—their love of the sea, and their love of their land.

from fjord to fjord, the folk of the fjords almost invariably travel. Many of the children go to school by rowboat; by rowboat whole families go to church, or to weddings, or to funerals. They do their errands by rowboat, they go to some of their scattered fields or to some of their woodlots by rowboat. They go to the museum, to the fair, to picnics, by steamers that ply almost hourly from point to point; and when they go to Bergen to trade, to start on a journey, or to mingle in the great flow of the world's activities, they go by steamer.

The rowboat is to the fjord folk what the automobile is to the

American; the steamer is everything that the bus and the train have ever been.

The boathouse, built of logs felled in the winter's snows from forests far up the steep slopes back of the homestead, is the indispensable adjunct to every farmstead, every village household. It opens on one side to the very edge of the water, for the tide is negligible; and on the other side to the pathway from the boathouse to the house—the most footworn of all the homestead's ways. Similarly, the pier or wharf where the steamers dock is the most frequented of all the village congregating places, for there the mail comes in; there the season's surplus of cheese and lumber and handicrafts pile high for shipment to Newcastle or Hamburg or New York; there the tourist and tradesman land and bring new messages, new styles, new philosophies even.

At the docks and wharves all the folk of the village congregate; the men for most of their daily duties; the housewives every moment they can spare from their homes to chat and visit; the old ladies to knit and gossip; the little children to play about the beach, the piles, the edges of the busy landing-places. There they see the wares of the world unloaded in exchange for the wares their fjord distributes to the seven seas; the sailor lads home from their ships; the emigrants to the far corners of the world—from Argentine pampas, from Dakotan prairies, from Rhodesian steppes, from Queensland brush, from Oriental plantations—returning for a visit to the old fjord homestead.

Perhaps most interesting of all are the fishing boats and trawlers as they return with their catch of salmon netted at the outlet of the mountain streams; or of small fry, like herring, to be packed in oil or sauce as sardines; or of some deep water fish from the banks, to be dried, or salted, or otherwise processed and packed. Fishing is the ancient heritage of the fjord folk; niggardliness and poverty of the land have been compensated for by richness of the harvest from the sea—in fish, in whale or seal blubber, in shrimp, and sardine, and cod. They have turned to the sea to fill the larders they could coax the land only partially to fill, and much of their food has ever been, and still is, fish!

Small wonder that the Norwegian is a born sailorman, that the great merchant and passenger ships of the world are manned by Norwegian seamen, that the Norwegian flag flies over Norwegian bottoms in every port and harbor, on every shipping land and trade route that the seas of the world present. Small wonder that the old

white-haired grandmother, who knits so complacently by the landing place, can speak with authority of Istanbul, or Singapore, or San Diego, or Sydney—her sons and grandsons bring her gifts and news and pictures from all the great sea-cities of the world. Small wonder that in the schools of Norway, geography holds first place in the curricula—every boy and girl has a cousin, or an uncle, even a brother or sister, almost without exception at least one relative

FIG. 8. One of the many modest sawmills that characterize the fjord landscape, operated formerly by direct water power, but now in part by hydroelectric power. Wherever the accessible forest justifies such a sawmill and power is available, one has generally been built. Piles of deal for construction purposes, and of bolts for paper stocks, lie near the water's edge all along the shores of the fjord, particularly in summer and fall, when the logs felled and marketed from the preceding winter's work in the woods have been processed.

in some distant land, in some remote city. The lines of interest, the lines of contact, are farflung and widespread, cosmopolitan and universal.

It is from the variety and numbers of her sea-interests, her sea-contacts, that she has received her impetus, her incentive, to such heights of cultural attainment, to such leadership in the arts and sciences, in social and political leadership as Norway has displayed in the last half century. Her cultural empire knows no boundaries, her cultural influence no limitations—the seas with which her fjord

folk have made her so familiar have washed away all provincialism, all prejudice, all petty constraints of localism. Loving her rugged fjord shores passionately and patriotically, her folk, tho still Norway's children, have become citizens of the world.

The Rôle of the Forest

And as the seas have molded the destiny of the fjord folk and the history of Norway, so do the forests enter into their lives. Pine and spruce and birch, rising tier upon tier from the water's edge far up along the rocky slopes, growing luxuriantly in the uniformly mild temperatures and steady rain and snowfall that proximity to the warm sea provide, and supplying the folk with abundance of raw material for lumber and newsprint and homecraft artifact, form the riches of the resources that the fjord section affords.

Careful husbandry, thrifty processing, and scientific management, characterize the woodworking industry of the district. In winter the trees are felled and trimmed, and the logs slid down the chutes along the mountain slopes to the edge of the fjord or the banks of the streams of its tributary valleys, to be rafted to the sawmills and converted into merchantable commodities with the opening of spring.

Along the whole fjord coast, on both sides, almost every hamlet, large or small, boasts its sawmill, operated by hydroelectric power from some plant miles away, or by direct water power from the local stream, where the great resinous boles of the Norway pine, or the long sticks of spruce and fir, are shaped into fragrant deal—ship's timbers, construction lumber, mine props, shingles, boles for newsprint, or the thousand and one wares wrought of wood. Great heaps of sawn timber and paper stock await transport to European or American market. Sawdust is distilled into alcohol or some chemical.

Nothing is left unused. Waste bits of bark and discarded fragments are burned into charcoal. All the gnarly boles, all the small branches and boughs, all the slabs of bark not otherwise utilized are burned in the household stoves, in the great open fireplaces that warm the houses, that cook the food, that bake the bread. Wood is the fuel of the home folk.

Of domestic timber the fjord folk build their homes, their barns, their boathouses, their wharves and docks, their every structure. Of wood they fashion their furniture, their implements, almost their every item of simple home equipment. Of wood they build their churches, their schools, their storehouses. Thruout the whole

fjord section, as in all the lands of Fenno-Scandia, wood is the material upon which is based the industrial economy of the people as a whole, and which affords them profitable, income-yielding employment in winter when the stormy seas are least generous and hospitable, the alpine pastures closed to all remunerative labor. The woodlands in winter, the seas and pastures in summer, engage the strength and time and thought of Sogne Fjord's busy folk.

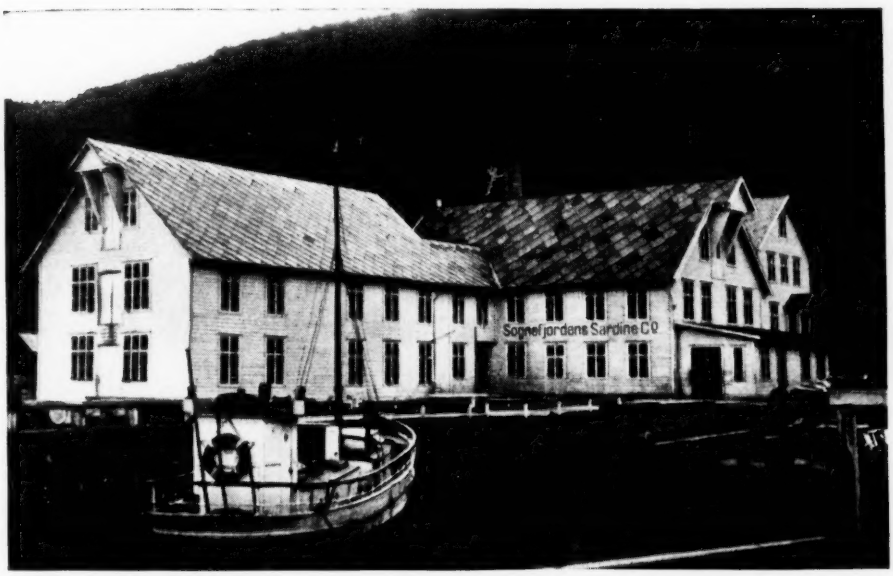

FIG. 9. The sardine packing plant at Leikanger where the fisherman's catch is prepared and packed for shipment. The sea has ever supplied the fjord folk with much of their food and income, and still plays an appreciable rôle in this function. Thousands of cases annually are packed in factories like this.

THE RÔLE OF THE PASTURES

The third major element in the economy of Sogne, as most other fjords, is the alpine pastures used for the summer pasturage of flocks of cattle, and the steep mountain slopes with their groves of stunted aspen, birch, and alder, their wisps of nutritious herbs and grasses for browsing sheep and goats.

The tiny patches of arable ground level enough or with slope gentle enough to cultivate and to hold in grass and crops against erosion, from which stones and stumps have been patiently cleared during the long centuries of human occupancy, are quite incapable of furnishing enough forage, or growing enough provender of any kind, to sustain or support any family and their cattle throughout

the year without the supplementary range that the mountain pastures supply. The nutritious grasses and sweet herbage of the uplands and mountain recesses support the cattle during the months when the land is free of snow. Watered with the seep from melting snowdrifts and the downpour of frequent rains, the vegetation of the highlands grows luxuriant enough to pasture, thruout the warmer months, more cattle than the farmsteads can support along the edge of the fjord during the colder months of winter. Transhumance thus becomes one of the features of fjord life, as it is of mountain environment nearly everywhere.

After the long months of winter stall feeding in the farmstead stables along the shores of the fjord, the cattle are first grazed upon the miniature meadows and fields about the family home; but just as soon as the snow on the slopes melts away from patches of grass, and the tender buds and shoots of deciduous leafwoods appear, the cattle are driven up the lower pathways of the neighboring mountains to piedmont pastures where they can readily maintain themselves for several weeks until the snow melts away farther up the mountain walls. The homestead meadows, heavily fertilized by the winter's store of stable manure, are then left to grow grass for the next winter's supply, and the little fields similarly released, are planted to turnips, potatoes, beets or other rootcrops or sown to some of the hardier grains like oats or rye, for supplementary forage.

On Sogne Fjord the first slope pastures utilized lie on the terrace rather indistinctly developed, but none the less significant in the pastoral economy of the region, several hundred feet above the level of the Fjord waters and the farmstead. The while the cattle, sheep, and goats pasture there they are attended by part of the family who stay constantly with them, guide them to the best forage, milk the fresh cows, care for the milk, and between times, cut firewood and gather surplus grass, to send down by cable to the farmstead below. The gleaming wire of the cables shines against the green growth of the hills like a strand of spider web. The line usually extends from the milk-house astride the homestead brook to some convenient ledge on the terrace. Mail, clean clothes, and food are sent up the cable. Fasces of firewood, bundles of hay, and pails of milk are sent down the cable.

By the time the terrace and intermediate slope pastures have been grazed and browsed short, the snow has melted away on the mountain pastures, and the movement upward resumes. For the

rest of the summer the flocks of cattle roam the range allotted to each farmstead, thriving and fattening upon the nutritious grasses and herbs, and yielding their largess of milk and cream to churn into butter and curd into cheese. The butter and cheese stored on the heights until the shepherds and milkmaids return to the lowlands when summer has waned and frost and flurries of snow mark the early approach of winter.

FIG. 10. Three typical farmsteads, with their boathouses, stables, and creameries that constitute a characteristic fjord "*by*" or croft. Nestled at the foot of the rugged inhospitable crags, over which even a footpath is difficult, and dependent upon the tiny plots of cleared soil about them for sustenance, they exemplify the peace, the cleanliness, the courage and strength of the folk who occupy them. The sea is their one vista, their one way of intimacy with the rest of the world.

The little stone or log dwelling in which the members of the family dwell during the season of alpine pasturage is the saeter about which centers so much of the folklore and folksongs, the legal and social regulations, the literature and art of the fjord people. A single saeter with its byres for cattle and its dairy for making and storing butter and cheese, may occupy a smaller of the alpine pastures; where the range is large enough to be shared by several herds and families, several saeters with their out-buildings may constitute a small community. The more persons in the saeter group, the merrier and the more pleasant, as a rule, the summer montane phase of the transhumace.

The milch cows, the heifers, and such cattle as are to be kept over winter, return to the lowland farmsteads and the stables when the mountain pasture season closes, in places and in season rather gradually grazing down the slopes as they go; in other places and other seasons, hastened by inclement weather to an abrupt descent. Some of the calves, and steers, and discarded cattle, fat and in prime condition, are driven down the dales and slopes eastward to markets in Oslo and elsewhere, for sale and slaughter as beef and veal.

Not every part of Sogne Fjord permits local ascent to the mountain pastures; and at such places the cattle are loaded upon the fjord steamers to be taken to other places from which the pastures are accessible and there unloaded. A customary scene at the wharves of some of the way-stations along Sogne Fjord in May, is the unloading from the hold of some of the larger steamers of two or three hundred cattle, collected from the crofts and hamlets on the way, to be sent to mountain pastures for the summer, and in part, to be returned in fall to their owners for winter feeding.

The sheep and goats, tho in some measure similarly moved to mountain browsing grounds, are more closely attached to the home farmsteads. Nimble, and sure of foot, they seek out paths and bits of browse and pasture along the precipitous cliffs, where no man may follow them. Like bits of fleece or cotton they reveal themselves against the rocky walls by a glint of white here, a small avalanche of rock and gravel set in motion there, or the tinkle of a bell upon the lead-wether in another place.

Cheese from goats is one of the staple articles of food and trade from the pastures of Sogne and other fjords, as is milk and cream cheese from cows, golden butter of primest quality, and other processed products from the pastures. In season great quantites of fluid milk are collected by steamer from the many milk stations and collection depots along the Fjord, for delivery to firms in Bergen that process it and distribute the products over the whole world.

Thus are the seas and streams and snowfields, the forests and the mountain pastures, the immaculate farmsteads and orderly villages interwoven into a picturesque pattern of human occupancy, an intricate pattern of fjord economy. The mettle of the folk, the temper of their national character, the quality of their living, their laws, their lore, are written in terms of distinctive fjord features. Their lives are cadenced to the rhythm of the seasons—in snowfield and cataract; in pine growth and fragrant alpine meadow; in sea highways and fishing fleets; in logs, and cattle, and fish, and water power.

PEDALS AND SAILS—THE LOG OF A DIFFERENT SORT OF TRIP TO EUROPE

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Given the privilege of spending our summer vacation in Europe, my brother, who had just graduated from high school, and I, a sophomore in college, decided that our trip was going to be different. The element of uniqueness entered from the start, when we booked passage on a freighter. We felt thoroly familiar with the size and varying moods of the Atlantic by the time we were steaming up the Schelde river to busy Antwerp.

Proceeding by train to The Hague, we were welcomed with all the warmth of Dutch hospitality by Herman, a boy we had known by correspondence for several years. For a month his untiring enthusiasm and energy gave us an introduction to the Dutch people and their country that has grown into a highly valued friendship.

A BOAT TRIP IN NETHERLANDS

We learned that there are two superb ways to explore the Netherlands—by bicycle, and by boat.

The bicycle is ideal, because, in the first place, the country is nowhere very hilly, and distances, as everywhere in western Europe, are not great. In many places, special cycling paths parallel the highways, or find their own way thru the countryside.

With bicycles so common as a means of transportation, one feels immediately at home riding one and not like an outsider straying in.

As for boats, the Netherlands is on intimate terms with water. Rivers and canals make excellent highway systems. The sea is never far away; strong, steady winds fill Dutch sails, besides turning Dutch windmills.

Our Dutch sailing trip came as a complete surprise thru the gracious courtesy of our friend Herman. At the time, we were scarcely aware of how it all happened. Three days after our arrival in The Hague, we were awakened at dawn and hurried to the station on borrowed bicycles. Twenty minutes later, without a word of Dutch at our command, and striving to remember the names of the four young men being presented to us, we found ourselves in Rotterdam.

It was gratifying to discover that they all spoke good English. Just a short walk from the station, and we had reached the water-

NOTE: The European correspondents mentioned in this article were secured thru the opportunities for foreign correspondence offered by "Our Mail Bag" of the *Christian Science Monitor*.

front, and boarded a thirty-foot sloop, belonging to the oldest of our new companions. It was but the work of an instant to cast off the lines, and we were running before wind and tide toward the river's mouth.

That was the beginning of the most glorious week either of us has ever spent. We cruised in leisurely fashion thru the immense bays and estuaries that make Zeeland a province of islands, sometimes sailing straight across an island by canal.

The province is one of picturesque costumes, of immense Flemish horses, of tremendous sea-dykes, of quaint fishing villages—and we saw them all. Our Dutch companions proved to be delightful, all of them alert, active, and warm-hearted. We left them with deep regret when we finally berthed at Rotterdam again.

The provinces of South Holland and North Holland were revealed to us in all their charm and beauty during the subsequent week. We caught a glimpse of a cheese market at Alkmaar, with its centuries-old weighing house, and of cheese carriers wearing broad-brimmed blue hats.

In Alsmeer we were taken to see the up-to-date flower market, where huge rooms are filled with rolling tables piled high with cut flowers. In the auction rooms, the buyers sit in a sort of gallery, while on a large dial before them a pointer rotates to indicate prices on a descending scale. A table of flowers is rolled in, and the pointer begins turning. When it reaches the price the buyer wishes to pay, he presses a button before him, and the number of the first to make a bid is flashed on the dial. Many of the flowers are shipped by airplane to urban centers as distant as Paris.

By Automobile and Bicycle

An auto trip with our friend Herman took us north to the great dyke which closes the mouth of the former Zuider Zee, now the Ijsselmeer. The dyke, some twenty miles long, and about a hundred yards wide, is an impressive feat of engineering, with its mighty storm-beaten shoulders, and huge sluice gates.

On our return, we motored across the Wieringermeer Polder, the first of the four polders which are to be reclaimed from the waters of the Zuider Zee. The area is as flat as the plains of Kansas, and sown largely in wheat, with only an occasional village visible. Here and there a rotting ship's hulk in the middle of a field is a reminder that this was once the bottom of the sea.

A week's cycling trip took us thru the central part of Holland

to the German frontier, and back, with many pleasant acquaintances along the way, and a greatly increased appreciation of variety in this little country. There really are hills here, quite a contrast with the flat polders of the west; and pine forests that remind us of our own Michigan. We wandered thru one of the great coöperative dairies one day, and witnessed the perfected techniques of wholesale cheese manufacture.

It was on this trip that we became acquainted with the Youth Hostel movement. Our enthusiastic support was immediately attracted by this scheme of providing wholesome and inexpensive lodging for young hikers and cyclists. Its international scope and spirit make it a vital influence in promoting world peace.

One evening in Enschede, near the eastern border, our delightful young hosts gathered a dozen friends from the neighborhood. In a bicycle cavalcade we wandered thru the surrounding countryside, stopping to visit some of the spotlessly clean farm-houses, where the farmers are reputed to be millionaires, and own fine trotting horses, and handsome prize-winning cattle and poultry. From Enschede to The Hague, we decided to try a "century" run, and actually made one hundred and forty-three miles in a day's cycling, with bicycles loaded.

In Northern France

The second chapter of our trip was devoted to France. A few hours on the train took us from the land of the Nordics to the land of the Romance peoples. Crossing the border at dusk, we joined the mad scramble at the customs station, and did our best to raise our rusty high-school French above the din of a hundred fluent native tongues. We produced every card and ticket we had managed to collect thus far, in our efforts to prove that we were not the advance guard of an invading army. We emerged from the entanglements of red tape just as the train was pulling out, and made a leap for the last car. Soon afterward, we rumbled into Lille, extricated our Dutch bicycles from the baggage car, and pedaled to a hotel.

In the next four days we cycled steadily southward and westward out of the industrial region of Artois, across Picardy's rolling hills, once the scene of a devastating phase of the World War; thru lovely Normandy, with its sturdy half-timbered houses, by way of Rouen, busy port of the Seine, past the Deauville resorts on the Channel, and industrial Caen, to Mont Saint Michel.

As we came over the last rise of the Norman hills, we saw that

world famous rock of Mont Saint Michel lying in the distant bay against the sunset. It was unbelievably dream-like. In an hour we had reached and crossed the causeway to the island, and after a superb French dinner, hied ourselves to bed in a little inn on whose site a score of knights must once upon a time have been housed, in days when the island was a ramparted stronghold. The next morning we joined a crowd of French tourists, and wandered thru the fascinating halls and dungeons of the remarkably preserved abbey.

In a few easy days we crossed Brittany, with its gentle hills and pretty hedgerows, and high-wheeled little carts carrying ruddy-faced women to market. Finally we reached Quimper, near the southwestern point of the peninsula. From here we took a little side-trip to Douarnenez, one of the quaint little fishing villages nearby.

Across the bay an emerald hill sloped steeply to the water. Blue nets were drying from the masts of the tiny boats in the harbor, and clusters of fishermen, dressed in faded red dungaree suits, chatted by the quayside. We recalled Loti's story of the "Iceland Fisherman," and asked one of the old men if he had ever been to Iceland to fish. Oh, indeed he had, many a time; but that was years ago. In these days, the steam-powered trawlers of the North monopolize the Great Banks. He was a wizened little fellow, with a cheery face, like his mates on the wharf. The women of the village seemed solemn and stern, probably their heritage from mothers who had watched their men-folk sail away in tiny cockle-shells, ever at the mercy of the great ocean.

In the Chateau Country

From Quimper we journeyed by train into the heart of the Touraine, taking our bicycles as baggage for the insignificant sum of thirteen cents, a rate that we found was good for any railroad trip in France. At Blois, we paid a visit to a French family we had known thru correspondence—one of the few occasions that we were able to visit in a French home. We left most of our baggage at Blois, and spent three days cycling thru the famous chateau country, with its architectural gems nestled in the valley of the Loire.

At the Youth Hostel at Tours we met a group of cycling companions, and passed a fascinating day with them, finding French boys of our own age different in many ways, yet interesting and likeable. One of our discoveries that day was the extent to which French politics permeates even the youth of the country.

ON TO CARCASSONNE

Returning to Blois, we embarked on another train ride, this time south to Bordeaux, and on thru Toulouse to Carcassonne. As we went farther and farther south, the ever-changing "room-mates" in our third-class compartment became more loquacious, and in contrast to the taciturn Frenchman of the North, everyone wanted to know who we were, where we were going, and then, almost invariably, what people really thought of Roosevelt's New Deal.

Carcassonne, with its accurately restored walled city, was well worth the five-hundred mile train ride we had taken to see it. We exhumed our long-forgotten love of fortresses and knights, and roamed among the mighty battlements in childish delight. In the distance lay the great French Massif to the north, and the Pyrenees to the south, and here stood this grim castle in all its rugged grandeur, once the defiant outpost of European civilization. We were carried away with the thrill of it.

ALONG THE RHONE

A pleasant ride down the broad valley brought us to the Mediterranean, blue as the depths of the azure southern sky. The towns were glistening white clusters of houses on vine-covered slopes, and life moved in the gentle tempo of the Mediterranean world. Acre after acre, mile after mile of grapevines unrolled as we cycled on thru Sete and Montpellier, to Nimes. In that city, northern center of Roman glory, we surveyed the mighty arena and crumbling Roman temples. Nearby we stood in awe before the arches of the great Pont du Gard, spanning a wooded valley, built to carry water on its way from the hills to the settlements on the plains. It deepens respect for that race of builders, the Romans, to see these silent monuments to their genius.

At Avignon, historically famous little town with its great Palace of the Popes, we crossed the swift Rhone, and there turned northward into its rich, wide valley. As we rolled along the level highway, we heard a droning overhead, and looked up to see the Graf Zeppelin, symbolic destroyer of distance, nosing its way home to Germany, after one of its regular trips from South America.

AMONG THE FRENCH ALPS

At Valence we resorted to the railroad to take us eastward to Grenoble, nestled in a flat valley surrounded by the massive foothills of the Alps. A day in this cosmopolitan little city, and then

on by train into the heart of the mountains themselves. Ever northward and eastward we went, stopping now and then to change to smaller and slower trains, until at last it was the tiny electric train which crept upward into the shadow of that mightiest of Alpine monarchs, Mont Blanc. At a little town, a few miles above Chamonix, we climbed eagerly out to find ourselves greeted by another correspondence friend, a native of the valley and an expert mountaineer.

We spent two glorious days with our host and guide, getting a taste of Alpinism in the mountains surrounding that beautiful spot —days that will live forever in our memories. He wanted us to stay two months, to learn to climb the reputedly difficult "Needles" that tower above the valley. But the third morning, with great reluctance, we mounted our bicycles and rolled down the valley of Chamonix in a drenching rain. The road soon became level. The sun was shining that afternoon when we pedaled into Geneva. Our visit to the mecca of internationalists took us, of course, to the old and new League buildings, the latter, at the time, still not completed, but very grand in its setting above the mountain-rimmed lake.

Seeing Switzerland

To our ultimate delight, we undertook the somewhat doubtful project of invading Switzerland by bicycle. A memorable ride brought us along the beautiful road circling the north shore of Lake Geneva, then up for some eight miles of switchbacks into the "Oberland," over whose pleasantly rolling terrain we cycled for several hours. It was a surprise to find ourselves at nightfall climbing once more, but the night was filled with moonlight; so we went on, walking the last few miles until we reached the top of a high pass, then swiftly down the other side to a tiny mountain inn with huge feather beds.

There were four short but marvelous days with Swiss friends who live just where the undulating northwestern plateau meets the high mountains. We discovered that it is not only the foreigner who makes the Swiss Alps his playground. At the last stroke of noon on Saturday, all the Swiss nation pulls on its hobnailed shoes, packs its rucksack, and heads for its unrivalled "back-yard," the mountains. With borrowed shoes and rucksack we joined the light-hearted throng, and spent Saturday night in the hay-loft of a cattle herder's hut far above timber line, and Sunday amidst the peaks. The ideal "week-end"!

HOME AGAIN

Once more our cycles went aboard the train, this time moving toward Paris. With only four days in the capital, we were kept on the jump getting everything in. It was thrilling, every minute of it, with the stimulating vigor of Paris all about us. But we never regretted having spent the time we did in the French provinces, and obtaining what we felt was an idea of the real France, and not just of its renowned metropolis.

Back thru Belgium we went, with a stop to see the Brussels exposition, in many ways like the Chicago "Century of Progress," yet how different was that staid and undemonstrative old-world crowd! In the Netherlands once more—"home," it seemed—we made a short cruise with our sailing friends into the Ijsselmeer. Then all was over. Our friends came en masse to the dock. The freighter slipped gently toward the sea, and the last farewell was swallowed by the night.

NOTE

The essential expenses of the trip described amounted to about $300.00 for each of us, divided roughly as follows:

Ocean passage	$110.00	Bicycles	40.00
Meals and lodging	100.00	Miscellaneous	15.00
Train fares	35.00		
		Total	$300.00

SAIGON, FRENCH INDO-CHINA

SHANNON McCUNE
Syracuse University

THE APPROACH TO SAIGON

Coming up the Donai River from the China Sea in the grey light of the dawn we are impressed by the flatness of the landscape, relieved by only a small line of hills in the northeast and seemingly devoid of human occupancy. But as the sun rises and the boat winds its way along the meanders of the river, the first impression is changed, for from the vantage point of the boat deck, comparatively high above the delta, the landscape comes to life. As the light increases, what was seemingly unbroken dense jungle becomes rice fields scattered among the mangrove swamps. Here and there are darker patches marking clusters of houses, the villages from which the inhabitants are beginning to go out to work in their fields. The tributary rivers seem to awaken, also, and serve their double purpose of canals and fishing grounds. In the distance, seemingly a mirage amidst these strange surroundings, gleam the spires and towers of the city of Saigon, "The Pearl of the Far East."

The sky is clear for it is April and the monsoon has not yet started. If we were from two to five months later the monsoon would be here in full force with heavy rainfall. The heat, already oppressive in the early morning, is typical of the temperature which varies only slightly from day to day and from month to month.

As the morning wears on and the boat passes farther into the interior, the scene becomes increasingly animated. The river and the canals teem with life. More land has been cleared from the tropical rain forest and is being used for rice fields. After slowly twisting up the river for 40 miles in a channel only 1,000 feet wide and 33 feet deep, the steamer warps into the Messagarie Maritime docks, a part of the docking facilities which stretch for four miles along the left bank of the river. Most of the tourist passengers have made plans to visit the ruins of the ancient palaces and temples at Angkor in Cambodia, a day's auto drive to the northwest, but to us the major interest is the city of Saigon.

The entrance which we have made is far different from the expedition of the French which in February 17, 1859, made its way up the river and took military control of the region. Two years later

Fig. 1. Looking up the Saigon River, with ocean-going vessels and warehouses in the foreground, and the river winding away to the right on the flat land. To the left lies the city of Saigon, hidden among the foliage of the trees. Courtesy, French Information Center.

Saigon and its immediate hinterland, Cochin-China, were formally ceded to the French by the native ruler. Altho as Prei-Kor ("Forest of Kapok Trees"), Saigon was inhabited in pre-historic ages and became a fortified city under the Khmer kings, it was only a fishing village of small importance at the advent of the French. Now, however, as a French authority says, "Saigon se place en tête de toutes les villes de notre domaine colonial."

The City of Saigon

From our vantage point on the deck we can see the river before us with a couple of French cruisers anchored and small native boats going up and down the river or entering the important canal, L'Arroyo Chinois, which is just below us and goes to the west to the Mekong River, via Cholon, the large industrial city bordering Saigon. Up at the bend of the river is a drydock and an arsenal from which floats the tri-color of France. The shores are crowded with

small boats from which a constant stream of persons are coming and going to the landing stages and warehouses. Our view of the town is blocked by the trees which were planted by the French when they first came, so that we must go down to the street level to learn more about Saigon.

Our reconnaisance trip thru the streets leaves a different impression than that which an early traveller received in 1872. For

Fig. 2. Panorama of Saigon. In the background to the left is the Saigon River; out from the foliage of the center of the city stand the Cathedral and the Government buildings; in the foreground is one of the tributary canals. Courtesy, French Information Center.

example, the trees which he drew as little saplings, protected from roaming animals by wire netting, are now large shade trees, giving Saigon a distinctive peculiarity among the ports of the Far East. The appearance of the Palais du Gouverneur General now in the center of a beautiful park was to him "in the midst of a tropical jungle and surrounded by only a few bamboo huts, most droll."[1]

[1] Frank Vincent, The Land of the White Elephant. New York, 1874.

Now a closer harmony is being struck between the European and the Asiatic influences and Saigon is like a French provincial town transplanted to an Oriental setting. Back from the river and its port facilities are numerous large public buildings, placed along broad tree-lined streets with gardens and parks having exuberant tropical vegetation. Further into the city, there are, in the French style, street cafes, large department stores, office buildings, and above all,

Fig. 3. L'Arroyo Chinois, the canal which branches off from the Saigon River in the foreground and is the main artery of river traffic between Saigon and Cholon. The shores are crowded with small boats carrying commerce to the warehouses along the banks. To the right lies the main part of the city of Saigon. Courtesy, French Information Center.

dominating the sky line, the red brick Cathedral. In connection with the French town is the better residential district with fine boulevards, bordered by tamarind and teak trees forming a canopy, with villas in the midst of tropical gardens, and with well-groomed parks scattered thru it. Out from this center there is a gradual transition to the native districts with flimsy straw huts crowding closely together and housing the bulk of the population.

The streets show this mixture of Europe and the Orient even more plainly for all manner of people can be seen. According to the latest (1931) census, there was a population of 123,298 persons, of whom 11,115 were Europeans. The native people are for the most part Annamites, a race with Chinese culture; in addition there are

Fig. 4. Le Boulevard Norodorn, a typical tree-lined street in Saigon. Courtesy, French Information Center.

some Cambodians, who have an Indian culture. The Europeans keep in close touch with the home land and are engaged in colonial, business, or religious affairs. The Chinese have a definite place in the community, especially in the commercial life, altho most of them live in Cholon. These totally different people mingling in the streets make the city very colorful and present strange contrasts.

The Hinterland of Saigon

Its Regions. The importance of Saigon lies not so much in the city, itself, but in the fact that it is the focusing point for a large and productive region which forms its hinterland. Saigon lies on the boundary of two natural regions into which Cochin-China may be divided. To the northeast there is a gradual rise to the Central Indo-China Plateau with ancient alluvial deposits and red earths derived from the alteration of basalts. Here are few wet lands suitable for rice production except in the valleys of the rivers and the land is covered by a vast tropical rain forest inhabited by a few primitive

tribes. Some land is being used for rubber production and the forest products are its greatest contributions to Saigon at the present.

The northwest, in contrast, is a country of low relief, formed of recent alluvium and in which water is always present, either from rainfall or from irrigation from the rivers. Here the people are much more densely settled and rice, the fundamental product of the region, can easily be grown. Out of the 2,400,000 tons of rice produced in Cochin-China in 1927, 97 per cent was grown here altho this region contains only 64 per cent of the area.[2] Altho the agricultural land has increased almost four fold since 1883, this area can be made even more productive. The increase in the yield has not been proportionate to the increase in acreage because of insecure economic factors. In 1929, 45 per cent of the rice growing area in Cochin-China was owned by 2½ per cent of the total number of farmers; 42½ per cent of the rice growing area was cultivated by one-fourth of the farmers on farms ranging from 12.4 to 124 acres in size; and the remaining one-eighth of the rice growing area was cultivated by 72½ per cent of the farmers on plots less than 12.4 acres in size. Thus there are many tenant and small farmers on poorer lands who do not take sufficient care of the land or use modern farming methods. The domination of one crop, rice, is another cause of instability in the economic life. This has especially been shown during the last few years when the demand for rice from

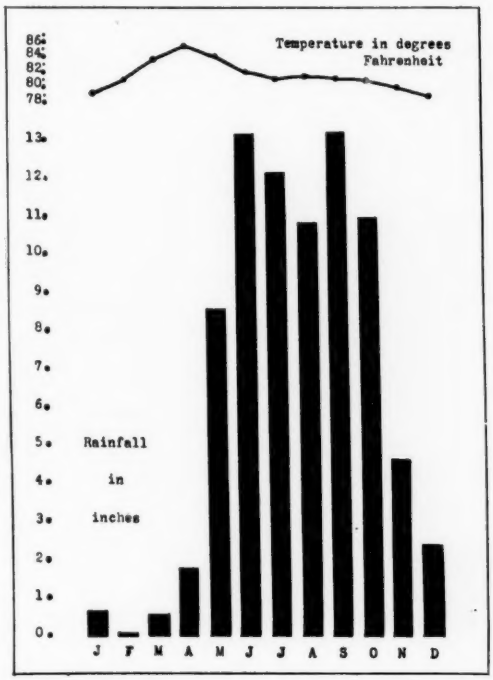

FIG. 5. The climatic data of Saigon, French Indo-China. The city is 36 feet above sea level, in longitude 106° 42′ 4″ and latitude 10° 46′ 47″. From "Annuaire Statistique de L'Indo-Chine," Hanoi, 1934. Average annual rainfall is 78.82 inches and the average annual temperature is 81.68°F.

[2] P. Gourou, L'Indochine Francaise. Hanoi, 1929.

other nations fell off and caused a serious crisis. The price of rice, computed even in the native currency, in 1929 was three and a half times what it was in 1934. These insecure factors are being corrected by the adoption of better economic practices, such as the diversification of crops and other corrective measures.

Altho it will be the most important crop for many years, rice is not the sole product of the region. Corn and spices, such as pepper, cinnamon, and ginger, are grown, and rubber plantations are being established. Along the waterways and the coast there is much fishing, serving as an additional source of food and income. There is

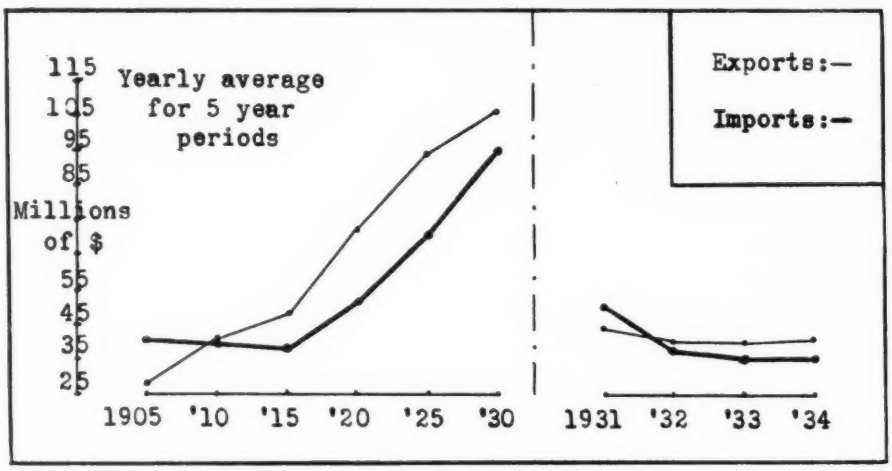

Fig. 6. The total trade of Indo-China thru the years.

enough tobacco, coffee, and tea grown to supply the needs of the inhabitants.

In the hinterland, altho not so near or so closely connected to Saigon, is the upper drainage basin of the Mekong River. Here rice is also grown but is mostly consumed by the native population. The Tonlé Sap, a lake along one of the tributaries, is a center of the fisheries, and fish and fish products are exported thru Saigon. Silk of good quality is produced, and cotton and cane sugar are recently introduced crops which are growing in importance.

Its Transportation Facilities. None of this hinterland, however, would have the importance it has for Saigon, if it did not have an excellent system of transportation which knits it together with Saigon as its focus. We have seen that the city is of easy access to the ocean for large vessels, for it is not on the silt-laden Mekong

River but is on the Saigon branch of the Donai River and thus is more easily kept silt-free. It is advantageously located near world trade routes and is only 25 days distant from Marseilles. There is a regular air mail and express service, also. In addition to being the greatest foreign trade port, Saigon is the greatest river port of Indo-China. From it a system of canals, using the natural waterways, for the most part, extends in all directions. There are railroads which when completed will link Saigon with Bangkok and Hanoi, and auto roads extending out from the city, paralleling the railroads and connecting their missing links, and in other directions. However, these roads and railroads, altho faster, do not carry the volume of trade which the waterways bear.

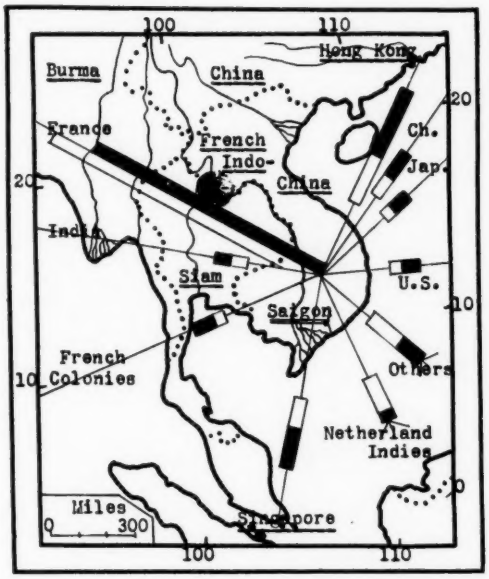

Fig. 7. A map of Indo-China. The place names are underlined. Superimposed is a diagram showing the export trade in solid black, and the import trade, blocked out, of Indo-China with various different countries in 1934.

Its Industries. The influence of the hinterland is naturally very great on Saigon. Some industries have developed, such as rice and lumber mills and factories for tobacco, rubber goods, and cement tiles, which reflect this influence. There are also industries occasioned by presence of the city, such as breweries, distilleries, ice manufacturing, silk weaving, jewelry, and trinkets.

The industrial center however, is in Cholon, only 9 miles to the west of Saigon and in reality a suburb of it. The city was founded by a Chinese colony in the seventeenth century and in 1931 the Chinese comprised half of the population of 134,060 persons. It is a typical Oriental city with a picturesque confusion of buildings, streets, and canals in striking contrast to its more orderly neighbor. It is very dependent on the hinterland for its raw materials. Rice milling is the principal industry and in 1928 there were 42 establishments capable of treating 2,600,000 tons of rice annually.[2] The city was naturally very hard hit when the rice market collapsed and

lost 40,000 Chinese inhabitants in one year.[3] Other industries, such as fish oil extraction, silk weaving, lumber working, and distilling, reflect the importance of the hinterland.

The Trade of Saigon

By far the greatest importance of Saigon lies in commerce, for it has both an external and an internal trade of great proportions. The city is the most important port of Indo-China, handling three-fifths of the imports and three-fourths of the exports. Figures 5-9 present diagrams (based on statistics in the Foreign Commerce Yearbook, Washington, 1935) showing in a condensed manner the trade of Indo-China thru the years, the commodities which make up the trade, and the countries with which it is carried on. From these a general picture of the trade of Saigon can be drawn, altho the port does not handle some of these products and ships almost the entire trade in certain other products. For example, in 1927, none of the minerals went thru Saigon while 88 per cent of the rice was shipped via Saigon.

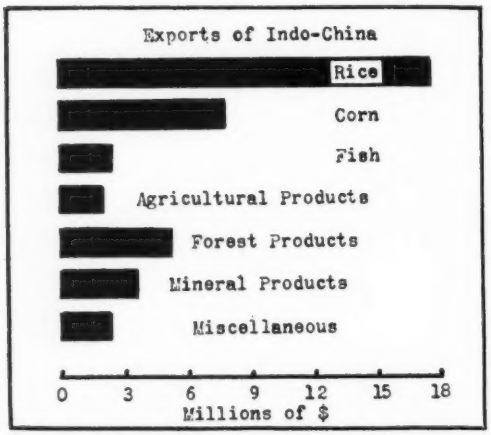

Fig. 8. The commodities exported from Indo-China in 1934.

Of the exports it can be seen that rice is of the greatest importance. Indo-China ranks next to Burma as the world's leading exporter of rice and in 1934, 1,529,504 tons, in 1935, 1,700,879 tons of rice were shipped from Saigon.[4] Other products from

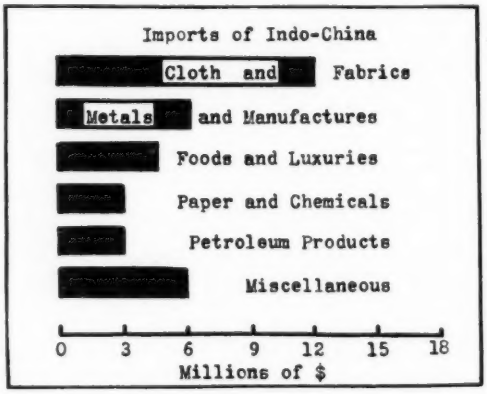

Fig. 9. The commodities imported to Indo-China in 1934.

[3] A statement by the President of the Municipal Council.

[4] Figures taken from Bulletin Hebdomadaire d'Information du Gouvernement General de L'Indochine, January 10, 1936.

the hinterland of Saigon which are exported in appreciable amounts are corn, rubber, fish, spices, and forest products. The imports are materials which are in demand for the large population of the city and hinterland and consist of manufactured and prepared products such as textiles and machines; foods and luxuries for the foreign populations, such as wines, cigarettes, and vermicelli; special manufactures, such as paper and chemicals; and natural products not found in Indo-China, such as petroleum.

Thus we have gained a knowledge of Saigon, the city, its hinterland, and trade. As our ship starts its tortuous journey down the river, we find ourselves marvelling at the changes which have taken place. When we realize that this has been accomplished thru the efforts of the French, of whose colonizing activities little is known, even in France, we can see that the claims of Vincent in 1872 that, "France in the east is, as far as my limited observation goes, a great farce—a travesty, a burlesque upon colonization in general," has not stood the test of time. His opinion that "a visit to Saigon, the infant capital of Asiatic France, leaves a ludicrous impression indeed upon the mind of an observant, thinking, and reflecting traveller," is far different than ours. We will remember Saigon above all as a busy, interesting, international port, closely tied to a productive and populous hinterland.

RECOGNITION OF CLIMATE TYPES

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The interpretation of climate statistics in words as well as in grafs and maps is a very profitable and enlightening exercise in geography for pupils of all ages. Monthly temperature and rainfall statistics may be given for an unnamed station, and pupils be required to comment upon them and to suggest where the station might be. This work focuses attention upon the characteristics of climate types, and serves as an excellent method to revise the distribution of climate types either in a particular continent which is under study, or over the world as a whole. The basis of climatic classification, variation within the type, and transition from one type to another all become more apparent and real. Much geography is learned incidentally, such as temperature allowance for altitude, the frequent occurrence of a dry month in regions regarded as wet all year, or the peculiar rise in temperature in monsoon countries as the rainfall decreases, tho the sun's altitude is also decreasing. Such exercises are positive reasoning work for pupils, in which an expression of opinion is sought on statistical information. Training of this type should be a fundamental part of our modern educational system when so much information is published in statistical form. Many pupils seem quite unable to tackle the problem until some systematic method of analysis is introduced. Our purpose is here to outline a method which has met with success in dealing with pupils between eleven and sixteen years of age.

The system involves assessing statistical values to generally descriptive terms. After careful examination of many books and atlases, and checking many examples from statistics, the scale of values shown in Table I was adopted.

TABLE I

Statistical Scale of Values

Temperature		*Rainfall*	
Hot	Over 70°F.	Wet	Over 4″
Warm	50°-70°F.	Fairly Wet	2″-4″
Mild	30°-50°F.	Fairly Dry	1″-2″
Cold	Below 30°F.	Dry	0″-1″

The figures relate to the average temperature or total rainfall, for a month. Any month with an average temperature exceeding 70°F.

would be described as Hot; if between 50° and 70°F. as Warm, and so on. The essential elements in the climate of a region can be described at this stage in a pupil's career by choice of four terms from the above table, for example, hot dry summer, warm fairly wet winter. The first step in the interpretation of climate statistics is therefore to reduce them to this outline form, either by choosing January and July figures, or the warmest and coldest months of the year. In practice it is found to simplify matters still further if these terms are written in symbol form, tho always read at full length. The symbols adopted are shown in Table II. The problem now resolves itself into converting the statistics into an appropriate symbol, and recognizing the type of climate from the symbol. The method of approach may be set out in steps.

1. Draw four small freehand circles ready to fill in with climate symbols.
2. Fill in the first pair with appropriate temperature and rainfall symbols for the warmest month. Add the sign for summer.
3. Fill in the second pair with appropriate temperature and rainfall symbols for the coolest month. Add the sign for winter.
4. Name the Climate Type from the completed symbol.
5. Name the hemisphere by examining whether January or July has the higher temperature.
6. From the hemisphere and climate type, name the probable regions where the station may be.
7. Add any additional information which the statistics reveal.

To comply with numbers 4 and 6, a certain amount of geographical knowledge is involved. This should be given in the lessons preceding such an exercise. For example, young pupils studying the regional geography of South America will be told of the characteristics of the climate of various regions; and these may be reduced to a minimum in symbol form and tabulated. Statistics are then chosen from South America, the pupils transcribe these into symbols, and then identify the symbol as belonging to a particular region. Examples may be chosen from any part of the world for pupils who have covered the world in their syllabus. Any attempt to name a place at sight and then to try to prove the correctness of the guess is to be discouraged as the approach is all wrong.

The following table indicates broadly the principle types of climate in symbol form. It may be modified at will, and can be adapted to the use of a given teacher or class.

Table II. CLIMATE TYPES AND SYMBOLS

HOT BELT	Equatorial	H H	Sudan	H H	Monsoon	H H	Sahara	H W
WARM BELT	Mediterranean	H W	China	H W	Continental or Turan	H W	Iran	H M
COOL BELT	West Europe	W M	St. Lawrence	W C	Continental	W C	Altai	W C

KEY. H Hot W Warm M Mild C Cold + Summer , Winter

Wet Fairly wet Fairly dry Dry

Among advantages which can be claimed are the general application of the method to pupils of all ages, the small amount of memory work involved, the sense of security that is felt in its application, and the large number of examples which can be taken in a short time. A rough statistical interpretation is given of climate types, and this can be used in comparisons of climate regions. No complications arise due to hemisphere, as the same symbols are applicable to both. The teacher can also build up his own table of Climate Types and Symbols, and employ in it the nomenclature he favors. This is a most important point, for there is a multiplicity of terms in use in textbooks. The writer recently examined the nomenclature in twelve English school geographies, and found that tho there were less than twenty climate types described, ninety nine terms were employed, and no two authors used an identical series of names for their climate types. Symbols reduce them all to common denominators.

Stations can be chosen with a view to their difficulty of identification. In the lower school only places with climate statistics characteristic of a type will be given. In the middle school modifications of the type can be introduced for example:—

Station A. (Swakopmund, Southwest Africa)

Temperature	January, 63° F.	July, 54°F.
Rainfall	January, 0″	July, 0″

The symbol for these figures does not appear in Table II, but the station is evidently in a desert in the Southern Hemisphere. The cause of the low temperature will be attributed to the cool Benguela Current off shore. Such difficulties as these do not lead to a confu-

sion of ideas, but to a better appreciation of the climate region concept.

Among senior pupils, position within the statistical range for the symbol should be observed. There is a material difference between temperatures of 51°F. and 69°F., tho they are both described as warm. If modification of symbol seems necessary to make it correspond to a type, the former temperature could be regarded as indicating Mild conditions, and the latter as Hot, but not vice versa. The following statistics should not evoke the simple response that the place is in a region of North West Europe Type of Climate, in the Northern Hemisphere, but reasoned mention should be made that it appears transitional towards Continental Type.

Station B. (Berlin)

Temperature	January, 31°F.	July, 65°F.
Rainfall	January, 1.5″	July, 3.1″

Profitable work can also be done with stations where altitude is an important factor. Examples could be multipled to show that the exception and the border-line case lead to a greater increase of knowledge than the perfectly normal or ideal case. Choice must be made according to circumstances.

Finally, lest it be urged that reduction to a symbol is superfluous, it may be said that in practice this seems the point upon which the whole thing pivots, giving the work interest and a visible simplicity.

EDITORIAL NOTES AND NEWS

Time passes rapidly and in its passage leaves a record of successes and failures. Our attention has just been called to the interesting fact that this issue marks forty years of continued publication of the JOURNAL. Forty years ago the JOURNAL was planned and brought into being by Professor Richard E. Dodge. For thirteen years he financed and guided it in its youthful development. He was also the first president of the National Council of Geography Teachers and continues his devotion to the cause of geographic education. He builded well. To the best of our knowledge the JOURNAL is the oldest magazine for teachers in America devoted to a special subject.

The Boston Association of Geography Teachers is continuing its publication of a four page bulletin, edited by Leonard O. Packard, and sponsoring three meetings a year. At the fall meeting Maurice Leahy was slated for an illustrated lecture on "Ireland Moves Forward."

HARRIET SMITH, Secretary-treasurer of Gamma chapter of Gamma Theta Upsilon, Huntsville, Texas, reports a membership of 84 active and 10 honorary members. At the fall initiation and banquet, the chapter was addressed by Dr. George Schlesselmann of the Texas Agricultural and Mechanical College on "Some Geographers and Their Contributions to Science." Nationally known geographers sent greetings, mimeographed copies of which were at each plate, the original letters being bound and presented to the chapter for its files.

A series of exchange lectures has been arranged between the Departments of Geology and Geography of Northwestern University and Washington University. Dr. William H. Haas of Northwestern will lecture on problems of the tropics, with special reference to specific parts of Latin America, while Dr. Thomas of Washington University will devote two lectures to Saint Louis, one to the Ozarks, and another to land utilization and economic trends in Missouri.

The Wisconsin Conservation Department is planning to plant a billion fish in 1937 in its thousands of lakes and miles of trout streams. Portable oxygen aerating tanks will permit truck transportation of fish up to 300 miles. No state has ever attempted such large scale propagation. The recreational aspect of fishing can thus be promoted and at the same time the conservation of game fish will be assured.

The Nebraska State Council of Geography Teachers is of age. Twenty-one years ago, Dr. Bengtson, chairman of the department of geography, University of Nebraska, called a meeting of geographers in Omaha to organize a state chapter of the National Council. Ever since, the Council has been active in bringing distinguished guest speakers to the state meetings. It has also been a center for the dissemination of inspiration, and helps to the classroom teacher, as well as presenting its members with a five page mimeographed bulletin issued five times a year. A new feature of the bulletin is a children's page designed to mix fun and work and stimulate originality.

Representatives of eight Southern Appalachian states met this fall with representatives of the T.V.A. to discuss large scale planning of the recreational resources of the Southern Highlands. The Shenandoah and Great Smoky National Parks are the best

known areas but many others are expected to become equally attractive when made accessible. Local development within a state will be left to that state's Planning Commission but, it is hoped, that it will be integrated with those of the other states.

The summer of 1932 marked the first successful crossing of the Northeast Passage in a single year. For 400 years explorers tried to negotiate a crossing, but it was not until 1868 that Nordenskiold succeeded, but then only after being forced to spend a winter near Bering Straits. A similar experience befell each of the next two successful crossings, that of the Russian, Vilkitsky, in 1914-1915, and of Amundson in 1918-1920. Then came the summer of 1932 when the Russians made the passage in two months. This was followed by other Russian experimental expeditions when some spectacular rescues were effected by powerful ice breakers, planes, and radio service. Finally, the year 1935 might be said to mark the turning point from experimentation to the establishment of regular schedules to various parts of the Arctic, particularly to the Kara Sea. Now in addition to the mechanical development aiding navigation, there are sailing charts, meteorological services via radio, and maps showing the character and distribution of the forests and tundra, and the mineral resources of that vast region between the Ob and the Yenisei rivers. Altho the Kara Sea is open only 100 days in a year, already cargoes of wood products, furs, fish, and phosphate rock (apatite) have moved west into world markets. Research is directed toward the maintenance of healthful and enjoyable living conditions where mushroom towns, especially at joint river and sea ports, now exploit these resources. It is reported that Kirovsk, the phosphate mining center of the Kola Peninsula, already boasts a population of 40,000. Efforts are also directed toward a permanent occupancy centered around self-sustaining farming and industrial activities and a long time program for the wise use of the native plant and animal life. To offset disease and the dreaded melancholy of the long polar night, different types of entertainment and the amenities of civilization are provided, special diets are prescribed together with monthly medical examinations. Such is the transformation of what only ten years ago was a wilderness inhabited by primitive peoples, more often exploited than educated by their few contacts with the white man.

The Missouri Council of Geography Teachers held its annual meeting in November, in Kansas City. Those appearing on the program were C. E. Marston, Principal of Blenheim School; Dr. Sidney E. Ekblaw, professor of geography at the University of Kansas City; Mary E. Keith, supervisor of intermediate grades, State Teachers College, Maryville; and M. H. Shearer, teacher of physiography, Westport High School, Kansas City.

The soy bean, a newcomer in United States' fields but a decade ago, in 1934 actually exceeded in bushel production our old staple crops, rye and flax. No wonder, then, that it has found its way into Chicago's Board of Trade so long dominated by our grains. The production is still concentrated in Illinois, which usually produces as much as all the other states put together. In many places it is not allowed to mature but cut green for hay or "hogged" down in the field.

GEOGRAPHICAL PUBLICATIONS

Vernor C. Finch and Glenn T. Trewartha. **Elements of Geography.** 752 pages plus appendices and index. McGraw Hill Book Co., N.Y. 1936

The purpose of this text, as stated by the authors, is "to supply textual material covering the elements of geography in a form particularly suited to class room discussion in beginning courses in college geography." The first three chapters set forth the field of geography, present the fundamental facts of the earth and its planetary relations, and discuss maps and their uses. The authors consider the fundamental purpose of geography is to delimit and describe the regions of the earth rather than to point out relationships or adaptations of life forms to environment.

The text is divided into three parts: I—The Natural Elements of Landscape; II—The Cultural Elements of Landscape; III—The Geographic Realms. Part I, 560 pages, is divided into five "Sections," the Sections into chapters, the chapters into subheadings and serially numbered topics. The concepts of temperature, moisture, air pressure, winds and storms are developed with a clarity found in few textbooks. Nine plates of outline maps and graf charts give opportunity for further student activity. Köppen's classification of climates, with a simplification of terminology, is used.

A brief discussion of the processes concerned with the origin of land forms is followed by 154 pages of description of land forms, their distribution, and stages of development; 130 pages are devoted to the discussion of Earth Resources: Water, Biotic Resources, Soils, and Minerals.

In Part II, the authors offer the first classification of cultural features of landscape that has been made. The main factors in the determination of each type are stated and examples of each are pointed out.

The final 100 pages, Part III, is a "regional synthesis and summary of natural features" in which the whole is brought together by a grouping of the areas in five Geographic Realms: The Humid Tropical Realms; The Dry Realms; The Humid Mesothermal Realms; The Humid Microthermal Realms; and the Polar Realms. Here only do the authors devote much space to expression of relationships or adjustment of life to its environment. In the preceding pages they have laid an excellent foundation for this closing summary. Their logical and interpretative approach to each topic is highly commendable and will be of great aid to the student who encounters difficulties in beginning courses in college geography. No space is wasted on conventional pictures. The division of the material is easily adjusted to either quarter or semester courses. This book will undoubtedly receive a general welcome.

Indiana University J. E. SWITZER

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The Bulgarian Valley of Roses. By Henry J. Bruman 41

Mr. Bruman is a teaching assistant in the department of geography of the University of California at Berkeley.

This is the sixth contribution to our series on the geography of Europe. Next month "The Plains of the Po" will be discussed by Dr. W. O. Blanchard of the University of Illinois.

The Study of Cities as a Concluding Unit in Economic Geography. By J. R. Whitaker 50

Dr. Whitaker is an assistant professor of geography in the University of Wisconsin and joint editor of "Our Natural Resources and Their Conservation." The study presented reflects the author's interest in both educational geography and the geography of cities. Other studies have appeared in the JOURNAL and in the *Bulletin of the Geographical Society of Philadelphia.*

The Development and Functioning of the Port of Churchill. By Ida May Shrode 54

Miss Shrode is a teacher in the Pasadena Junior College. She contributed "A Catalog Study of Geography in Educational Institutions Above the High School," to the JOURNAL, May, 1929.

Calculating Rotational Speeds and the Lengths of Degrees of Longitude in Various Latitudes. By Harold S. Palmer 61

Dr. Palmer is professor of geology, University of Hawaii. His chief interest is in the various fields of systematic and areal geology in Hawaii. While on sabbatical leave in Vienna he became interested in and continued his study of mathematical geography.

The Syracuse Meeting of the National Council of Geography Teachers. By W. J. Berry 67

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